In The Claims

Please amend the claims as follows.

1. (Amended) In a [A] centrifugal separator having a bowl-shaped centrifuge defining an interior cavity [and]; a scraper blade positioned within the interior cavity for rotational movement synchronous with the centrifuge bowl and rotational movement independent from the centrifuge bowl; a shaft member [is] aligned with the centerline of the centrifuge bowl, one end of the shaft attached at one end to the scraper blade[, its opposed end being directly engaged with a drive member]; a spindle member [is] positioned about a portion of the shaft member and being attached at [one] a first end to the centrifuge bowl, [its] the opposed end [being] of the spindle member and the shaft member both engaged with a clutch member for engaging and disengaging the shaft member with the spindle member; [wherein the shaft member and spindle member engage to rotate the bowl and scraper blade in a synchronous speed and wherein the clutch member disengages the spindle member from the shaft member to stop rotation of the bowl while the scraper blade continues rotation within the stopped bowl] the invention comprising a single drive member directly engaged with the opposed end of the shaft member that is in opposition to the end of the shaft member engaged with the scraper blade, wherein the direct engagement between the single drive member and the scraper blade drives the scraper blade independent of the centrifugal bowl to provide the high torque force necessary to scrape the interior cavity of the bowl and wherein the clutch member engages to lock the shaft member and spindle member together only when the centrifugal bowl and scraper blade are intended to operate at a synchronous speed.

2. (Original) The centrifugal separator of claim 1 wherein the drive member is a servo motor responsive to the load created by the rotating centrifuge bowl.

3. (Original) The centrifugal separator of claim 1 wherein the clutch member is a centrifugal clutch which engages the spindle member with the shaft member when the shaft member reaches a predetermined threshold speed and disengages if the speed of the shaft member drops below the predetermined threshold speed.

4. (Original) The centrifugal separator of claim 3 wherein the drive member is a servo motor responsive to the load created within the rotating centrifuge bowl and drops the rotational speed below the predetermined threshold speed upon sensing a predetermined load on the centrifuge bowl.

5. (Amended) In a [A] centrifugal separator [comprising:] having a centrifuge bowl, the bowl defining a cavity having an interior surface, an upper end, a lower end, and an axial centerline wherein the lower end has an opening communicating with the cavity; a hollow spindle connected to the upper end of the bowl in alignment with the axial centerline of the bowl; a scraper located within the cavity of the bowl; a shaft having an upper end and a lower end, [the upper end of the interior shaft engaged with a drive member,] the lower end of the [interior] shaft engaged with the scraper, the [interior] shaft extending through the hollow spindle in alignment with the axial centerline of the bowl; and a clutch member engaged between the shaft and spindle[, whereupon as the drive member rotates the shaft, the clutch member engages the shaft with the spindle, thereby causing the bowl and scraper to rotate synchronously.] : the invention comprising having the upper

end of the shaft directly engaged with a single drive motor such that the drive motor directly powers the scraper blade to provide the high torque necessary to scrape the interior surface of the centrifuge bowl when the bowl is not in motion and further, the clutch member engages the shaft with the spindle when it is desired to rotate the scraper blade and bowl at a synchronous speed.

6. (Original) A centrifugal separator according to claim 5 wherein only the scraper is rotatable within the bowl at or below a predetermined threshold speed for dislodging solids accumulated on the interior surface of the bowl.

7. (Original) A centrifugal separator according to claim 5 wherein both the scraper and bowl are rotatable during a high speed separation operation to substantially separate any solids and liquids.

8. (Original) A centrifugal separator according to claim 5 wherein the shaft and spindle are mechanically coupled together by a centrifugal clutch during a high speed separation operation so as to prevent relative movement therebetween during the separation operation.

9. (Original) The centrifugal separator of claim 5 wherein the drive member is a servo motor directly engaged with the shaft.

10. (Original) The centrifugal separator of claim 9 wherein the servo motor includes a speed adjustment means responsive to the load within the centrifuge bowl, wherein the motor slows the speed of rotation to disengage rotation of the bowl and initiate a scraping process of the interior surface of the bowl by the continually rotating scraper.

11. (Amended) A method for separating particulate from particulate laden fluid by means of a centrifugal separator comprising the steps of:

initiating power to a drive motor engaged with a shaft member, the shaft member being directly connected to a scraper blade located within a centrifuge bowl;

accelerating the drive motor speed and shaft speed above a predetermined threshold speed to activate a centrifugal[e] clutch [attached to the] located between a shaft member[, the centrifugal clutch also being engaged with] and a spindle member that is directly connected to the centrifuge bowl, wherein [the engaged] such activation causes the clutch to engage [between] the shaft [and] with the spindle to cause the bowl to rotate synchronously with the scraper blade;

accelerating the rotating bowl and scraper blade to a predetermined high speed;

injecting particle laden fluid into the bowl to fill the bowl, wherein the particulate suspended in the fluid is forced to the bowl inner interior surface by centrifugal force;

continuing rotation of the bowl and scraper blade to form a layer of particulate on the interior wall;

sensing that the particulate has accumulated to a predetermined thickness;

reducing speed of the drive motor to allow the cleansed fluid to drain from the centrifugal bowl;

stopping the drive motor to stop the bowl and scraper blade rotation;

locking the bowl in a fixed position; and

reactivating the drive motor to run at a slow speed with high torque,

thereby causing the scraper to rotate within the locked bowl to break up the accumulated particulate.

12. (Original) The method of claim 11 wherein the accumulated thickness of particulate is sensed by a load sensing mechanism.

13. (Original) The method of claim 11 wherein the scraper blade is rotated forward and backyard within the bowl to scrape the accumulated particulate off of the interior surface of the bowl.

14. (Amended) A method for separating particulate from particulate laden fluid by means of a centrifugal separator comprising the steps of:

initiating power to a drive motor engaged with a shaft member, [a] the shaft member being directly connected to a scraper blade located within a centrifuge bowl;

activating a clutch mechanism to engage to the scraper blade and centrifuge bowl to cause the scraper blade and centrifuge bowl to rotate synchronously;

injecting particle laden fluid into the bowl to fill the bowl, wherein the particulate suspended in the fluid is forced to the bowl inner interior surface by centrifugal force;

continuing rotation of the bowl and scraper blade to form a layer of particulate on the interior wall;

sensing that the particulate has accumulated to a predetermined thickness;

reducing speed of the drive motor to allow the cleansed fluid to drain from the centrifuge bowl;

stopping the drive motor to stop the bowl and scraper blade rotation;

locking the bowl in a fixed position and disengaging the clutch mechanism; and

reactivating the drive motor to cause the scraper blade to rotate within the locked bowl to break up the accumulated particulate.

15. (Original) The method of claim 14 wherein the accumulated thickness of the particulate is sensed by a load sensing mechanism.

16. (Original) The method of claim 14 wherein the scraper blade is rotated forward and backward within the bowl to scrape the accumulated particulate off the interior surface of the bowl.